

3.3 Average Cost

The science teachers at Everett Middle School want to take their eighth-graders on an overnight field trip to a nature center. It costs \$750 to rent the center facilities. The school budget does not provide funds to rent the nature center, so students must pay a fee. The trip will cost \$3 per student if all 250 students go. However, the teachers know it is unlikely that all students can go. They want to find the cost per student for any number of students.



Problem 3.3 Inverse Variation Patterns

- A. 1.** Write an equation relating the cost c per student to the number of students n .
- 2.** Use your equation to make a graph showing how the cost per student changes as the number of students increases.
- B. 1.** Find the change in the cost per student as the number of students increases from
- a.** 10 to 20 **b.** 100 to 110 **c.** 200 to 210
- 2.** How do your results show that the relationship between the number of students and the cost per student is not linear?
- C. 1.** Find the change in the per-student cost as the number of students increases from
- a.** 20 to 40 **b.** 40 to 80 **c.** 80 to 160
- 2.** Describe the pattern in your results. Explain how your equation from Question A shows this pattern.
- D.** The science teachers decide to charge \$5 per student for the trip. They will use any extra money to buy science equipment for the school.
- 1.** Write an equation for the amount a the teachers will collect if n students go on the trip.
- 2.** Sketch a graph of the relationship.
- 3.** Is this a linear relationship or an inverse variation? Explain.

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